

**How does internal migration by educational attainment react to regional unbalances? The case of Italy.<sup>1</sup>**  
**(Very preliminar)**

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**Abstract.**

We conduct an empirical investigation of the determinants of migration flows across Italian regions taking explicitly into account the educational attainment of migrants. We follow the standard macroeconomic migration theory where net migration depends on regional per capita GDP and unemployment differentials. Empirical results are similar at lower and upper-secondary educational level, for which internal migration is explained quite well by our model. Migration rates for primary school and university level educational attainment seem to respond mainly to relative regional per capita GDP rather than unemployment differentials.

**JEL Codes:** C23, I21, R23.

**Key words:** Italy, labour migration, human capital, income differences, unemployment.

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## **1. Introduction.**

The literature on migration has shown a quite strong direct link between educational attainment and migration propensity. One reason of such a phenomenon is that, since returns to human capital are higher the higher the level of education, the opportunity cost of staying in an area (country or region inside a country) increases with the education attainment. Thus, individuals who have higher level of education, also have a higher propensity to move. As a matter of fact, a common finding (see Ghatak *et Al.* 1996 for a survey; Solimano, 2006 for a more general discussion) is that highly educated individuals have a higher predisposition to move than people with low educational levels. As regards internal migration across Italian regions such a pattern has been found by Sestito (1991) and, more recently, by Svimez (2005) and Piras (2006) and is highlighted by our result as well.

In recent years, the upsurge of international migration of skilled workers, motivated by the brain drain/brain gain debate, has attracted a very large number of papers (see Docquier and Sekkat, 2006 and references therein). One of the main problems in trying to assess the empirical evidence of these issues is the lack of reliable comparative data on international migration by educational attainment. However, very recently, thanks to a new harmonised and comprehensive data set provided by Docquier and Marfouk (2006), a wave of empirical papers have tackled these problems. The Docquier and Marfouk (2006) data set relies on three data sets provided by Barro and Lee (2000), Cohen and Soto (2001) and De La Fuente and Domenech (2002) and makes some ad hoc assumptions for some countries for which data are unavailable.

Notwithstanding the improved quality of the data set assembled by those authors, it is clear that comparability problems across countries still persist: it is difficult to conceive that almost 200 countries put together in an international data set share the same political and social institutions, economic policy and so on. By analysing internal migration at regional level within a country, we overcome many of the criticisms that often are made regarding large samples cross-sectional studies. In spite of the good job done by Docquier and Marfouk (2006), we can be sure that data comparability problems are absent or definitively less severe at sub national level than in a multi country setting. Indeed, it can be safely assumed that regions within a country share the same economic fundamentals, social and political institutions and hence, as economic growth theory claims, are approaching a common long-run equilibrium, whereas the same can not

realistically be said for large samples of countries. In addition, social security and legal systems and, usually, language are the same within a national context.

In this respect, Italy has some peculiarities that makes it an interesting case study to be investigated. A well documented fact about Italian economy, is its dualism between the wealthy Central-northern regions and the less developed Southern ones (the *Mezzogiorno*). During the 1950s and the 1960s, millions of individuals moved from the backward Southern and, at that time, North-eastern regions towards the Central and North-western ones.<sup>2</sup> In spite of such a deep impact and though many works have disentangled this issue from a descriptive point of view, empirical analysis of the determinants of internal migration is still scanty.

To the best of our knowledge, Salvatore (1977) is the first to study internal migration across Italian regions. He shows that during the 1958-1974 time period, regions with relatively high unemployment rates, basically Southern ones, also have relatively high out-migration rates. Later on, Attanasio and Padoa-Schioppa (1991) study migration flows across six geographical areas for the period 1960-1986 and estimate an empirical model in which net migration is explained by local and national wages both in public and the private sector, by local and national male unemployment and by housing prices. Their results are mixed, suggesting the importance of “housing prices, public sector real wages and, to a lesser extent, private sector real wages and unemployment differentials” (pag. 286). Cannari *et Al.* (2000) look specifically at the role of housing market on geographic labour mobility from Southern to Central-northern regions. During the period from 1967 to 1992 they find that housing price differentials is a relevant explanatory factor, whereas the general index of house prices and the share of homeowners are not. Brunello *et Al.* (2001) estimate migration outflows from each of the eight Southern regions to the rest of the country from 1970 to 1993. Their reported evidence is “that the rapid increase both of relative wages and of social transfers per head during the 1970s and the 1980s has significantly reduced migration flows, more than compensating the opposite effect on migration of higher regional unemployment” (pag. 23). Overall, it emerges from these papers that during the 1960s and the 1970s, housing market conditions and real wages have played the main role in shaping migration across regions.

More recently, Furceri (2006) finds that during the period 1985-2001 interregional migration responds to GDP regional cyclical components. Basile and Causi (2007) find

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<sup>2</sup> Pugliese (2002, p. 39) reports that during the period from 1955 to 1975, 3.708.392 individuals moved from Southern to Central-northern regions with respect to 1.363.553 that moved in the opposite direction.

that from 1991 to 1995, when migration flows were generally decreasing, the effect of economic variables (unemployment and per capita income) on inter-provincial migration flows were negligible or nil; on the contrary, during the 1996-2000 period characterised by an increase of internal mobility, migration flows have reacted more rapidly to unemployment and per capita income. Thus, these two paper suggest that in the recent years internal mobility has reacted quite promptly to economic push and pull factors. Fachin (2007) concentrates his analysis on male migration during the period from 1970 to 1996. He considers seven macro-areas (North-West, North-East/Alps, North-East/Po Valley, Centre, Lazio, South-East and South-West) and studies emigration from the two Southern towards the remaining five macro-areas of the country.

Although important given their findings, none of these work has paid attention at the skill level of migrants and, in the light of what previously said, this is an important question to be investigated. In addition, the time span of many of these papers covers a quite distant historical period and given the renewed internal mobility that has recently been recorded (e.g. Svimez, 2005), it is interesting to conduct an empirical investigation of the determinants of migration flows across Italian regions taking explicitly into account the educational level of migrants. Finally, and maybe more important, as far as we know there is no other empirical investigation dealing with internal migration flows by educational achievement neither for developed, nor for developing countries. As such this paper aims also to stimulate similar studies for other countries and to make a comparative analysis of the results.

The paper is organised as follows. Next Section provides a review of the theoretical literature on migration. In Section 3 we sketch the model used in the empirical investigation of Section 5 that follows the illustration of the Italian schooling system done in Section 4. Finally, Section 6 concludes.

## **2. A short review of the theoretical literature on migration.**

Many contributions to the recent macroeconomic literature on migration start from the Harris and Todaro (1970) model of intersectoral migration.<sup>3</sup> In this set up people migrate from the rural (agricultural) sector to the urban (manufacturing) sector taking into account expected income, which, in turns, is defined by the wage rate times the

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<sup>3</sup> Another fundamental contribution to the recent economic theory of migration is Sjastaad (1962) who models migration as an investment in human capital done by individuals who evaluate costs and benefits of migration. For a recent survey of the economic literature on migration see Drinkwater *et Al.* (2002).

probability of finding a job. As pointed out by Pissarides and McMaster (1990) an implicit assumption of the Harris and Todaro approach is that individuals are risk-neutral and that they are not quantity constrained. Since these conditions in practise are not satisfied, they claim that both relative wages and unemployment differentials should enter separately into the model specification and in empirical estimates on migration decisions. In the same vein, also Faini and Venturini (1996) argue that liquidity constraints do matter in the migration decisions. Pedersen *et Al.* (2004) present empirical evidence on international migration on the bases of a theoretical model proposed by Zavodny (1997) in which individuals choose their location maximising a utility function which depends on location-specific amenities, individual characteristics and previous location. Among the location-specific amenities, a key role is played by average earnings and unemployment rates.

A very general macroeconomic migration function can thus be written as  $m_{ij} = F(Y_i, Y_j, U_i, U_j, \mathbf{Z}_i, \mathbf{Z}_j)$ , where migration from country  $j$  to country  $i$ ,  $m_{ij}$ , is “explained” by per capita incomes,  $Y_i$  and  $Y_j$ , and unemployment rates  $U_i$  and  $U_j$ , in both countries and by other push and pull factors  $\mathbf{Z}_i$  and  $\mathbf{Z}_j$ . In general, other non-economic factors, such as for example distance and climate, do influence migration flows. For the short time span we are going to study, however, we would expect them to be reasonably stable. As to the choice of the migration variable, various definitions are available. In order to take into account the size effect - that is the fact that an increased population in a country leads *per se* to an increase in the level of migration - migration flows usually are specified as migration *rates*, namely as the ratio of migrants to resident population either in the sending or in the receiving country.

### 3. Model specification.

In recent studies, the empirical methodology on migration across countries (Brücker and Schröder, 2005; Alvarez-Plata *et Al.*, 2003; Alecke *et Al.*, 2001; Puhani, 2001; Hatton 1995) or regions (Coulombe, 2006; Andrienko and Guriev, 2004; Nahuis and Parikh, 2004; Alecke *et Al.*, 2001) applies a logarithmic or a semi-logarithmic equation approach such as:

$$(1) \quad m_{ijt} = \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Y_{jt} + \alpha_3 \ln U_{it} + \alpha_4 \ln U_{jt} + \gamma_1 \mathbf{Z}_{it} + \gamma_2 \mathbf{Z}_{jt} + \varepsilon_{ijt}$$

where  $i, j$  and  $t$  denote, respectively, the receiving region, the sending region and the time period;  $m_{ijt}$  is the migration rate which, depending on the specific context to be investigated, can be expressed in terms of net flows or gross flows, namely in-flows or

out-flows (as a percentage of the sending or the receiving region's population) from region  $j$  to region  $i$ ;  $Y_{it}$  is per capita income in the host region;  $Y_{jt}$  is per capita income in the sending region;  $U_{it}$  is the rate of unemployment in region  $i$ ;  $U_{jt}$  is the rate of unemployment in region  $j$ . In order to capture push and pull factors of migration decision different from per capita income and unemployment, two vectors of variables for the receiving as well as the sending regions, namely  $\mathbf{Z}_{it}$  and  $\mathbf{Z}_{jt}$ , are plugged into the regression equation. Finally,  $\varepsilon_{ijt}$  is an additive error term uncorrelated with the covariates. If one assumes that the push and pull factors captured by  $\mathbf{Z}_{it}$  and  $\mathbf{Z}_{jt}$  do not change significantly over a short period of time, then they can be modelled as constants specific to each region:

$$(2) \quad m_{ijt} = \alpha_1 \ln Y_{it} + \alpha_2 \ln Y_{jt} + \alpha_3 \ln U_{it} + \alpha_4 \ln U_{jt} + \sum_{i=1}^M \lambda_i D_i + \sum_{j=1}^N \lambda_j D_j + \varepsilon_{ijt}$$

where  $D_i$  and  $D_j$  are regional effects that do not change over time. Frequently, an element taken explicitly into account in determining migration is the distance between the sending and the receiving region, because of the direct and indirect transportation costs of migration. We will see shortly that in our empirical approach, since we use as regressors the relative values of per capita income and unemployment rates of a region with respect to nationwide averages, this is precluded.<sup>4</sup> It is worth noticing that the semi-logarithm approach has the desirable characteristic of making the rising of net migration rate not linear with respect to the independent variables, thus implying that migration follows some form of saturation pattern (Hille and Straubhaar, 2001).

Equation (2) must be tailored to the case under investigation. In Italy the flow of migrants has almost always been unidirectional from the South to the Centre-North and, as argued by Bentolila and Dolado (1991), it does not make a difference whether net rather than gross migration rates are used. It is then convenient to assume that region's  $i$  net migration rate depends on relative per capita income and to relative unemployment rate, that is on the ratio of region's  $i$  relevant variables with respect to the national average. By using relative GDP and unemployment variables, we introduce a sort of source region all-other-destinations comparison into the analysis, overcoming the need to introduce a bilateral comparison of these variable from each couple of Italian regions and specifying a much more parsimonious econometric specification.

For this reason we study internal migration flows by educational attainment across the 20 Italian regions according to the following model:

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<sup>4</sup> For the same reason we cannot take into account the past periods stock of individuals who migrated as a proxy for network effects.

$$(3) \quad m_{iTA_t}^{edu(h)} = \alpha_0 + \alpha_1 \ln\left(\frac{Y_{it}}{Y_{ITA_t}}\right) + \alpha_2 \ln\left(\frac{U_{it}}{U_{ITA_t}}\right) + \mu_i + \varepsilon_{it}$$

where  $m_{iTA_t}^{edu(h)}$  is the net migration rate of region's  $i$  population with educational level  $h$  with respect to all other regions, that is:

$$(4) \quad m_{iTA_t}^{edu(h)} = \frac{(\text{inflows} - \text{outflows})_{iTA_t}^{edu(h)}}{\text{population}_{it}^{edu(h)}} \times 100$$

and  $edu(h)$  corresponds to educational level  $h$ , that is primary (*prim*), lower-secondary (*lower*), upper-secondary (*upper*) and university level (*univ*). In the empirical investigation, net migration rates by educational level are computed as percentage of migrants with respect to population with the same educational attainment. In addition,  $(Y_{it}/Y_{ITA_t})$  is region's  $i$  per capita income relative to national average,  $(U_{it}/U_{ITA_t})$  measures region's  $i$  unemployment rate relative to nationwide unemployment rate,  $\alpha_0$  is a constant,  $\mu_i$  are regional effects and  $\varepsilon_{it}$  is an additive error term. Regional per capita income differential is a proxy for differing wages and, more generally, wealth expectations for region  $i$  vis-à-vis all other regions. As for the second independent variable, the economic theory hints that higher relative regional unemployment rates discourage people from moving in and spur residents to move out. Therefore, region's  $i$  net migration rate is expected to be positively linked with region's  $i$  relative per capita income and inversely correlated with region's  $i$  relative unemployment rate, namely we would expect  $\alpha_1 > 0$  and  $\alpha_2 < 0$ .

#### 4. Italian schooling system.

In Italy the schooling system was articulated basically into four levels: primary school (it lasts 5 years), lower-secondary school (3 years), upper-secondary education (from 3 to 5 years, see below) and university degree (from 4 to 6 years according to the field of study). In recent years, various reforms have changed and are still changing the Italian educational system, particularly the university one, that nowadays is divided into three years introductory courses, plus two years specialisation courses. These changes, however, have not affected our empirical analysis, since the first wave of new graduates according the new rules were licensed after 2002, i.e. our final year. Upper-secondary education, which is under reform as well, is differentiated into six categories: classical, scientific, artistic, primary teacher training, technical schools and vocational education.

With the exception of vocational education that lasts up to three years and does not allow entering university, all the other categories do consent it. All categories, but primary teacher training that lasts 4 years, take 5 years to obtain a leaving certificate. However, a student with a primary teacher training certificate who wants to apply to a university course different from pedagogy, must attend one additional integrative year.

## **5. Empirical analysis.**

### **5.1 Data.**

Regional per capita GDP comes from the Crenos databank.<sup>5</sup> ISTAT provides the data on regional unemployment rates and on interregional migration flows by educational attainment.<sup>6</sup> These flows are classified into five groups: *laurea* (university degree), *diploma di scuola media superiore* (upper-secondary school), *licenza media inferiore* (lower-secondary school), *licenza elementare* (primary school) and *nessun titolo* (no schooling). It is worth noticing that in Italy changing residence is not compulsory and it could be the case that individuals move from one region to another without going to municipal register in order to record it; thus, recorded data under-report actual migration flows.

As previously said, net migration rates by educational level are computed as percentage of migrants with respect to population with the same educational attainment. In order to do that, we use resident population by educational level as classified by ISTAT according to a representative sampling. Unfortunately, starting from 1993 ISTAT brings together resident population with primary school and with no schooling and, as a consequence, we are forced to compute regional net migration rates pooling them into a single variable. For the sake of simplicity, however, in the rest of the paper we will refer only at primary school level net migration rate, but it should be clear that it has to be understood as net migration rate of people with no schooling or with primary school educational attainment.

As far as regional unemployment, ISTAT has recently updated its previous series by applying a new methodology that makes the two of them not homogeneous. The new series, disaggregated at regional level, spans from 1995 to 2006. However, given that the data on internal migration are available up to 2002, we have to use only the 1995-2002 time period. In the regression analysis, two different figures for unemployment have been used: unemployment rate and youth unemployment rate.

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<sup>5</sup> Available on-line at <http://www.crenos.it/>.

<sup>6</sup> Available on-line at <http://www.istat.it/>.



Table 1 reports the basic summary statistics of the variables. A look at figures regarding GDP levels and unemployment rates displays the huge differences across Italian regions, particularly among Central-northern on the one hand, and Southern at the other: the region with the highest value of per capita GDP, Valle d'Aosta, has a level more than double with respect to the one with the lowest, Calabria. The latter records also the worst performances as regards net migration rates, but for the university degree level, for which Basilicata has the record. On the contrary, Emilia Romagna has the highest (positive) net migration rates for all educational attainment, with the exception of the university level for which Valle d'Aosta outstrips all other regions. The dualistic structure of Italian regions is also testified by the huge differences in the figures regarding unemployment. As one can see, unemployment and youth unemployment rates are very low in Trentino Alto Adige in the North, compared with Sicilia in the South.

Figure 1 shows that internal migration rates by educational attainment are very differentiated across regions. In addition, and more importantly given the focus of our paper, there is a lot of variation as regards the different educational levels. In general, the higher the school level of migrants, the higher is the net migration rate. Thus a positive relationship between educational attainment and migration propensity, as commonly found in the empirical literature on migration, is confirmed by our data as well. In addition, while it is true that, generally speaking, Southern regions have negative net migration rates while Northern ones usually record positive net migration, for some regions and/or some educational levels it also happens that the sign is reversed.

## **5.2 Estimation results.**

Our empirical investigation is based on equation (3), estimated by fixed and random effects, where the regressors have been lagged one period. The proposed specification has the advantage of making it possible to model explicitly the sluggish adjustment of internal migration with respect to the relevant variables. It can be argued that migration rates affect regional per capita GDP by changing regional population, implying that there could be a reverse causality issue and that relative per capita GDP is actually endogenous. Furthermore, migration obviously influence the labour force and eventually employment, affecting, in turn, unemployment rates that are to be considered

endogenous as well (Bentivogli and Pagano, 1999). In order to cope with these problems, instrumental variables techniques to equation (3) should be applied.

Table 2 reports the regression results for total net migration rate. The relative per capita GDP is always significant and the point estimate varies from 0.57 to 0.76. Analogously the youth unemployment rate is also always significant and ranges from -0.07 to -0.10, on the contrary the unemployment rate is never statistically significant.

Regressions results for the primary school level are reported in Table 3. In all regressions regional relative per capita GDP enters significantly and with the expected sign, although the point estimate is quite different across regressions and varies from 0.24 to 0.58. On the contrary, the regional relative unemployment rates are never significant.

At lower-secondary educational level, internal migration is explained quite well by our model. Per capita GDP is always strongly positively correlated with net migration rates in all regressions reported in Table 4. In addition, the estimated coefficients are substantially higher than those for primary school level, ranging from 0.85 to 1.28. As for youth unemployment rate we find that it is statistically significant at 10%, whereas unemployment rate is not. The responsiveness of internal migration to relative per capita GDP is higher than that of relative unemployment.

Table 5 shows the results of upper-secondary educational level regressions. Relative per capita GDP is always highly significant and the point estimate varies from 0.95 to 1.43. The relative youth unemployment rate enters significantly in all regressions and the estimated coefficients vary from -0.10 to -0.17. Moreover, relative per capita GDP is still stronger than relative unemployment in determining internal migration.

Finally, Table 6 reports university level regressions. The estimates show that the response of interregional migration of college graduates to income and unemployment differentials is weaker than for upper and lower secondary educational levels. In the fixed effects regressions relative per capita GDP is never significant, whereas in the random effects regressions it would seem that it still plays an important role. The relative unemployment rate is significant only in one regression whereas the relative youth unemployment rate is statistically significant when the years dummies are included.

## **6. Conclusions.**

The recent upsurge of international migration across countries and internal migration across regions has recently attracted a huge number of theoretical and empirical studies. In this paper we have analysed interregional migration in Italy taking explicitly into account the educational level of migrants. During the 1950s and the 1960s Italy has been characterised by intense migration flows that moved from the Southern towards the Central and North-western regions. Later on, during the 1970s and the 1980s, internal migration decreased dramatically; however, starting from the middle of the 1990s, it has had a sensible increase.

We have followed the recent empirical literature on migration and estimated how internal migration rates by educational attainment reacts to relative per capita GDP and to relative unemployment. We have used two unemployment measures: unemployment rate and youth unemployment rate. Net regional migration rates by educational level have been computed as percentage of migrants with respect to regional population with the same educational level.

At primary school level, in the baseline regressions, migration rates respond as theoretically expected to relative regional per capita GDP but reacts wrongly or does not react at all to regional unemployment differentials. At lower- and upper-secondary educational level empirical results are similar, for both variables internal migration is explained quite well by our model. In all the baseline regressions relative per capita GDP is always strongly positively correlated with net migration rates. As for unemployment, both the relative unemployment rate and the relative youth unemployment rate are significant and have the correct negative sign. Finally at university level the regressions have shown that relative per capita GDP and unemployment rates differentials have a weak link with the migration rate.

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**Table 1.** Summary statistics of the untransformed variables for the Italian regions (Average values 1995-2002).

	Mean	Std Dev.	Max	Min
Net migration rates:				
Total	0.027	0.217	0.382	-0.339
			Emilia R.	Calabria
Primary school	0.019	0.099	0.171	-0.154
			Emilia R.	Calabria
Lower-secondary	0.049	0.295	0.571	-0.461
			Emilia R.	Calabria
Upper-secondary	0.012	0.343	0.537	-0.570
			Emilia R.	Calabria
University	-0.018	0.354	0.581	-0.714
			Valle d'A.	Basilicata
Per capita GDP	16,797	4264	23,227	10,537
			Valle d'A.	Calabria
Unemployment	10.83	5.539	23.025	3.612
			Sicilia	Trentino AA
Youth unemployment.	27.81	13.039	50.625	10.725
			Sicilia	Trentino AA

Note. Per capita GDP is given at constant 1995 price, all other variables are percentage.

**Table 2.** Determinants of interregional migration in Italy.

Dependent variable: net migration rate (total)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	0.0575 [0.002]	0.0544 [0.045]	0.0518 [0.004]	0.0486 [0.069]	0.0763 [0.004]	0.0427 [0.134]	0.0729 [0.003]	0.0376 [0.213]
PGDP <sub>t-1</sub>	0.6820 [0.067]	0.6380 [0.000]	0.6612 [0.062]	0.5987 [0.000]	0.7627 [0.057]	0.6262 [0.000]	0.7513 [0.036]	0.5718 [0.000]
UR <sub>t-1</sub>	-0.0302 [0.416]	-0.0392 [0.247]			-0.0508 [0.251]	-0.0506 [0.135]		
YUR <sub>t-1</sub>			-0.0687 [0.038]	-0.0692 [0.028]			-0.1022 [0.008]	-0.0939 [0.004]
Years dummy	NO	NO	NO	NO	YES	YES	YES	YES
R <sup>2</sup> -with.	0.0441	0.0435	0.0691	0.0689	0.0754	0.0745	0.1178	0.1163
R <sup>2</sup> -bet.	0.7771	0.7790	0.7788	0.7791	0.7794	0.7806	0.7794	0.7795
R <sup>2</sup> -ov.	0.7451	0.7469	0.7477	0.7481	0.7486	0.7497	0.7503	0.7504

Sample period 1995-2002. Total observations: 160. Heteroschedasticity robust *p*-values in brackets.

**Table 3.** Determinants of interregional migration in Italy.

Dependent variable: net migration rate (primary school)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	0.0495 [0.000]	0.0290 [0.056]	0.0493 [0.000]	0.0288 [0.085]	0.0658 [0.016]	0.0317 [0.026]	0.0666 [0.017]	0.0324 [0.083]
PGDP <sub><i>t-1</i></sub>	0.5342 [0.006]	0.2347 [0.000]	0.5791 [0.002]	0.2364 [0.001]	0.4834 [0.018]	0.2419 [0.000]	0.5512 [0.007]	0.2439 [0.000]
UR <sub><i>t-1</i></sub>	0.0391 [0.459]	-0.0165 [0.504]			0.0580 [0.205]	-0.0118 [0.622]		
YUR <sub><i>t-1</i></sub>			0.0137 [0.791]	-0.0169 [0.580]			0.0280 [0.550]	-0.0116 [0.683]
Years dummy	NO	NO	NO	NO	YES	YES	YES	YES
R <sup>2</sup> -with.	0.0325	0.0134	0.0283	0.0164	0.0849	0.0614	0.0782	0.0634
R <sup>2</sup> -bet.	0.5341	0.5992	0.5657	0.5938	0.4978	0.5926	0.5546	0.5881
R <sup>2</sup> -ov.	0.4135	0.4598	0.4364	0.4563	0.3969	0.4666	0.4369	0.4637

Sample period 1995-2002. Total observations: 160. Heteroschedasticity robust *p*-values in brackets.**Table 4.** Determinants of interregional migration in Italy.

Dependent variable: net migration rate (lower-secondary school)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	0.1102 [0.000]	0.0932 [0.015]	0.1016 [0.000]	0.0816 [0.032]	0.1115 [0.001]	0.0891 [0.037]	0.1082 [0.001]	0.0831 [0.048]
PGDP <sub><i>t-1</i></sub>	1.2575 [0.013]	0.9402 [0.000]	1.2653 [0.011]	0.8559 [0.000]	1.2351 [0.025]	0.9368 [0.000]	1.2822 [0.014]	0.8504 [0.000]
UR <sub><i>t-1</i></sub>	-0.0111 [0.831]	-0.0228 [0.668]			-0.0090 [0.877]	-0.0231 [0.663]		
YUR <sub><i>t-1</i></sub>			-0.0897 [0.072]	-0.0864 [0.084]			-0.0976 [0.085]	-0.0898 [0.083]
Years dummy	NO	NO	NO	NO	YES	YES	YES	YES
R <sup>2</sup> -with.	0.0720	0.0713	0.0953	0.0926	0.0902	0.0878	0.1125	0.1083
R <sup>2</sup> -bet.	0.7352	0.7388	0.7430	0.7454	0.7348	0.7389	0.7435	0.7458
R <sup>2</sup> -ov.	0.7035	0.7069	0.7118	0.7142	0.7040	0.7079	0.7129	0.7153

Sample period 1995-2002. Total observations: 160. Heteroschedasticity robust *p*-values in brackets.



**Table 5.** Determinants of interregional migration in Italy.

Dependent variable: net migration rate (upper-secondary school)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	0.0645 [0.046]	0.0562 [0.193]	0.0570 [0.069]	0.0499 [0.240]	0.0811 [0.047]	0.0321 [0.502]	0.0755 [0.047]	0.0350 [0.492]
PGDP <sub><i>t-1</i></sub>	1.2436 [0.065]	1.0357 [0.000]	1.1645 [0.073]	0.9952 [0.000]	1.4287 [0.045]	1.0103 [0.000]	1.3363 [0.041]	0.9475 [0.000]
UR <sub><i>t-1</i></sub>	-0.0853 [0.208]	-0.0652 [0.285]			-0.1347 [0.098]	-0.0886 [0.144]		
YUR <sub><i>t-1</i></sub>			-0.1081 [0.055]	-0.0971 [0.066]			-0.1703 [0.024]	-0.1397 [0.020]
Years dummy	NO	NO	NO	NO	YES	YES	YES	YES
R <sup>2</sup> -with.	0.0549	0.0549	0.0696	0.0696	0.0893	0.0872	0.1171	0.1153
R <sup>2</sup> -bet.	0.7806	0.7807	0.7806	0.7804	0.7793	0.7797	0.7791	0.7779
R <sup>2</sup> -ov.	0.7458	0.7460	0.7465	0.7464	0.7459	0.7464	0.7470	0.7460

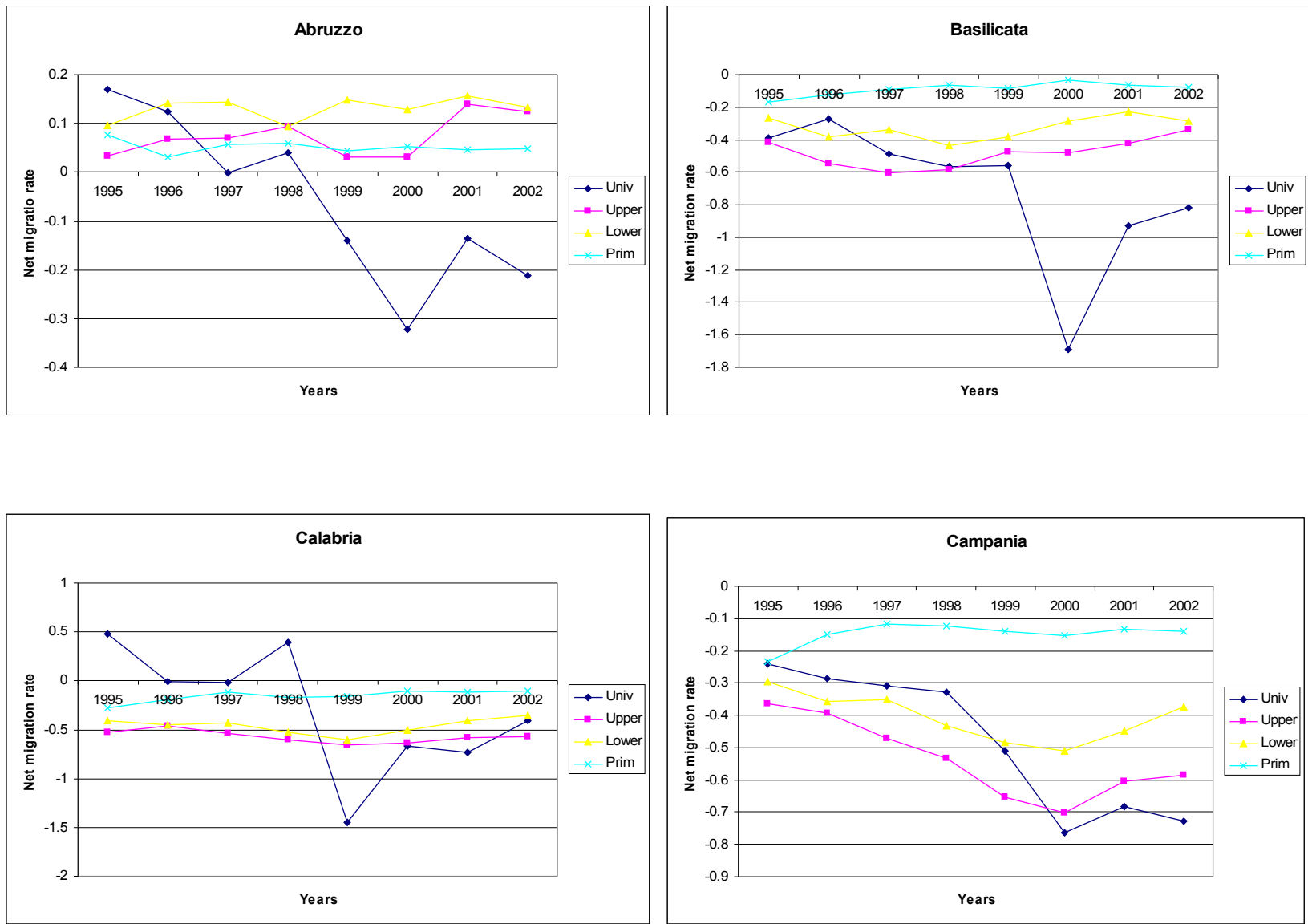
Sample period 1995-2002. Total observations: 160. Heteroschedasticity robust *p*-values in brackets.**Table 6.** Determinants of interregional migration in Italy.

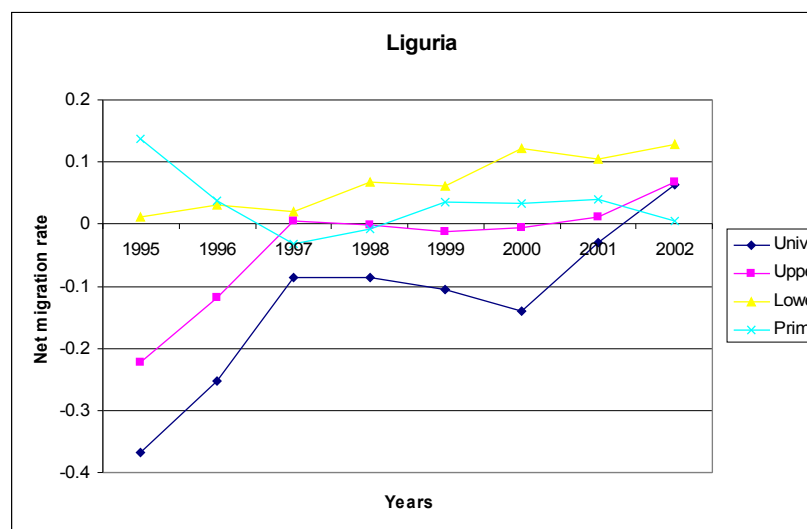
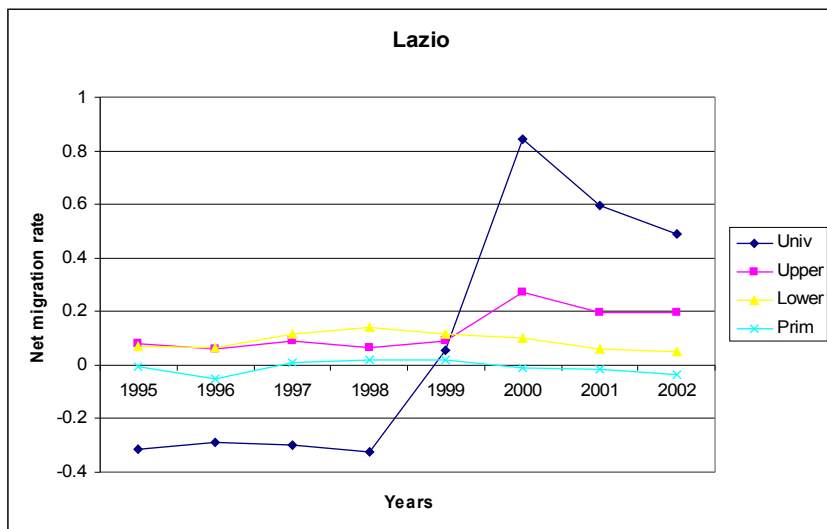
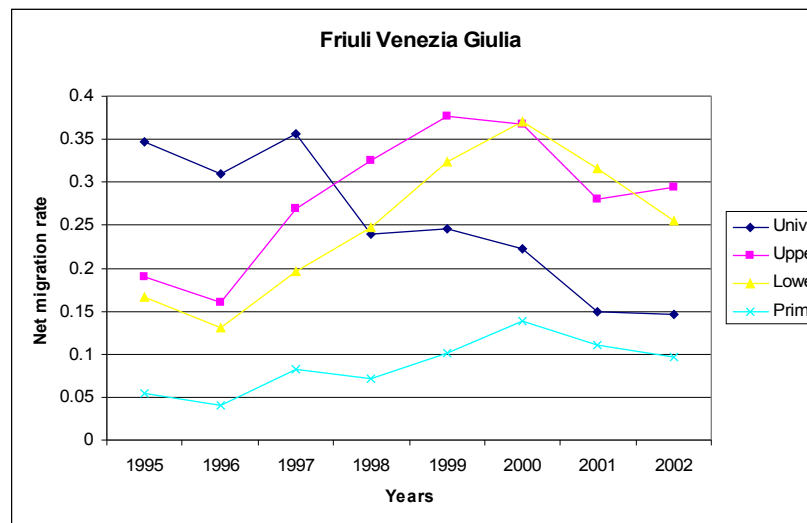
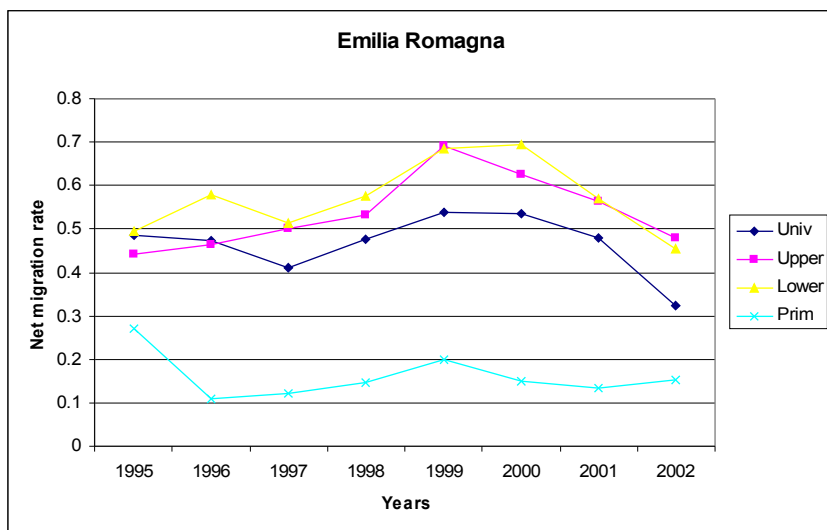
Dependent variable: net migration rate (university degree)

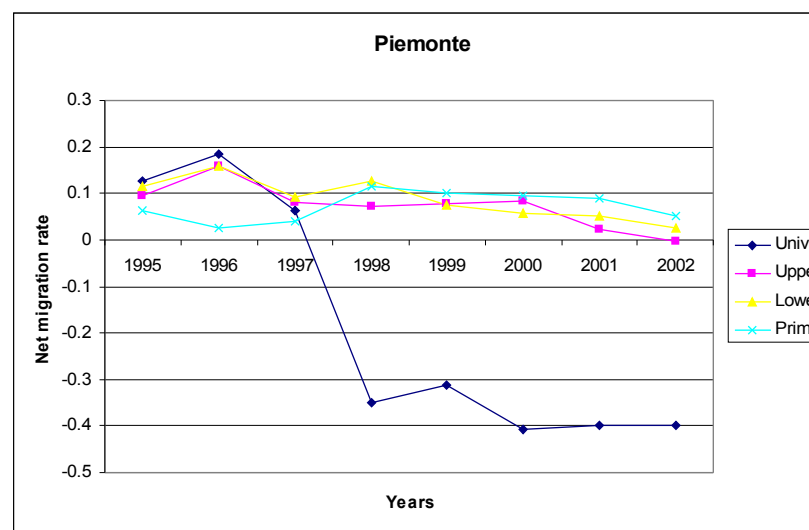
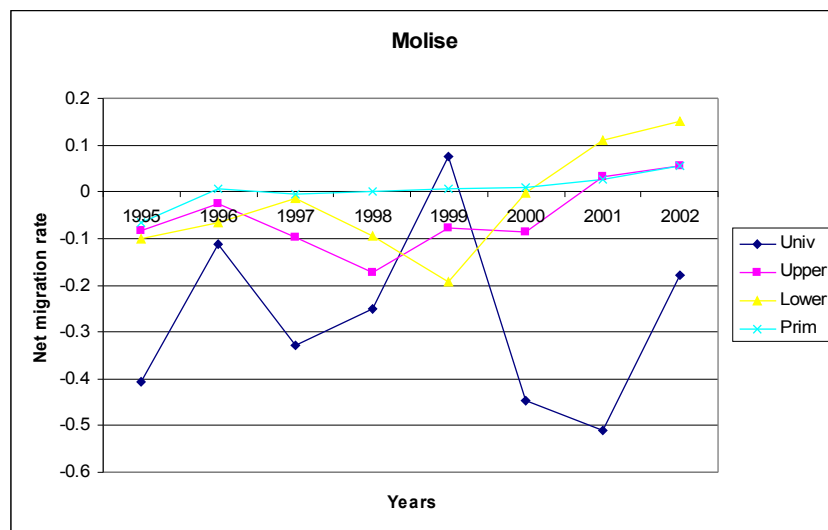
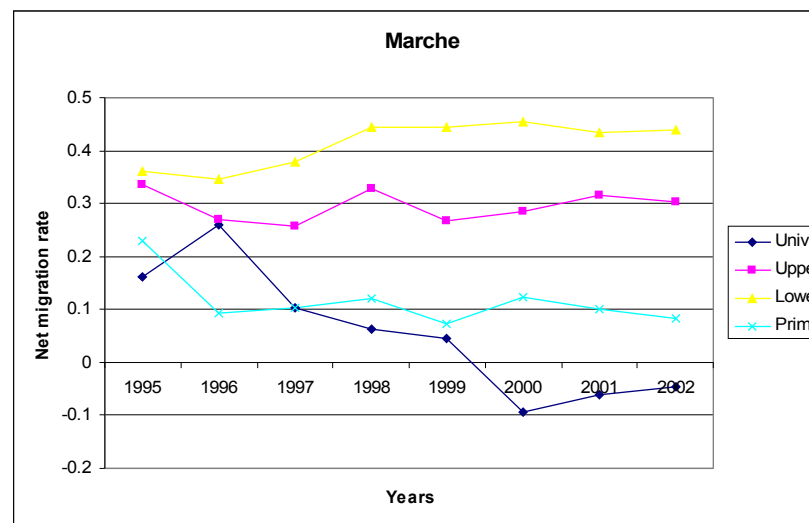
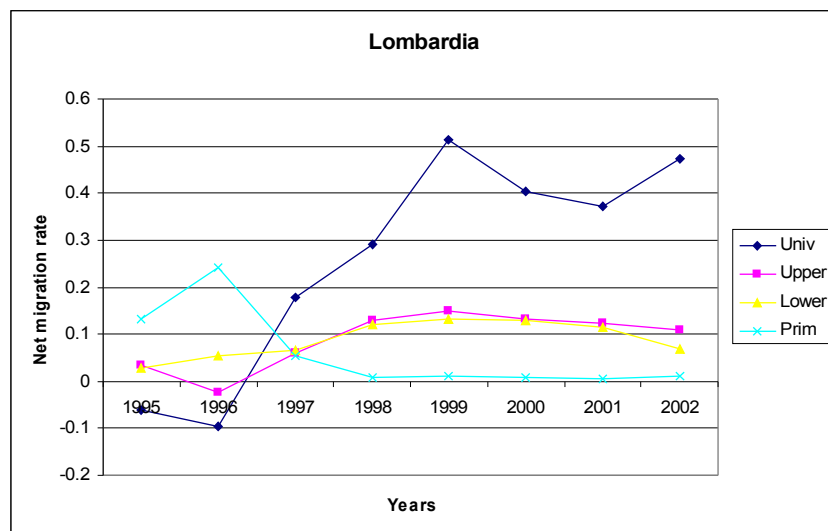
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	-0.1645 [0.192]	-0.0056 [0.928]	-0.1807 [0.154]	-0.0113 [0.857]	-0.0251 [0.857]	0.1273 [0.093]	-0.0475 [0.713]	-0.1962 [0.084]
PGDP <sub><i>t-1</i></sub>	-2.2326 [0.403]	0.8585 [0.030]	-2.4305 [0.333]	0.8381 [0.015]	-0.8026 [0.749]	0.7164 [0.066]	-1.2051 [0.575]	0.5491 [0.140]
UR <sub><i>t-1</i></sub>	-0.2081 [0.389]	-0.1562 [0.291]			-0.5626 [0.038]	-0.2466 [0.104]		
YUR <sub><i>t-1</i></sub>			-0.2441 [0.105]	-0.1834 [0.214]			-0.6850 [0.000]	-0.3786 [0.025]
Years dummy	NO	NO	NO	NO	YES	YES	YES	YES
R <sup>2</sup> -with.	0.0251	0.0002	0.0312	0.0008	0.1920	0.1687	0.2304	0.2054
R <sup>2</sup> -bet.	0.7091	0.7178	0.7113	0.7177	0.0557	0.7007	0.0292	0.6800
R <sup>2</sup> -ov.	0.4648	0.4812	0.4648	0.4822	0.0904	0.5268	0.0021	0.5239

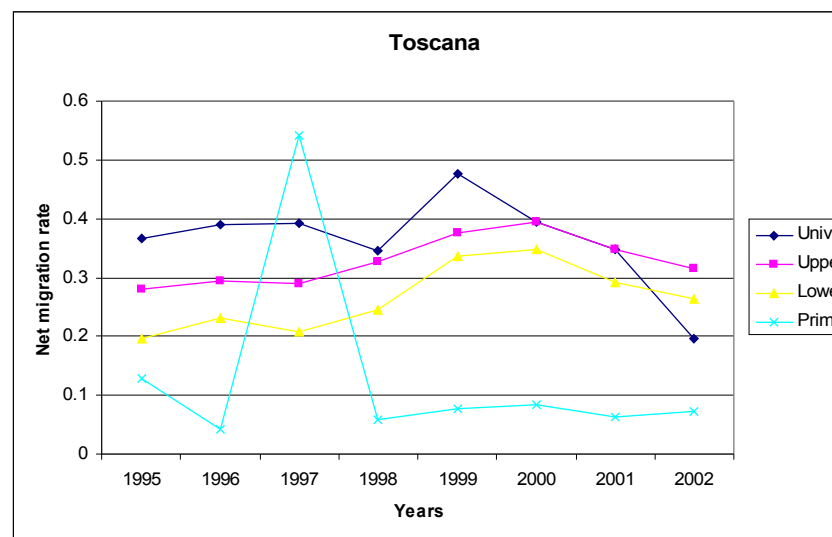
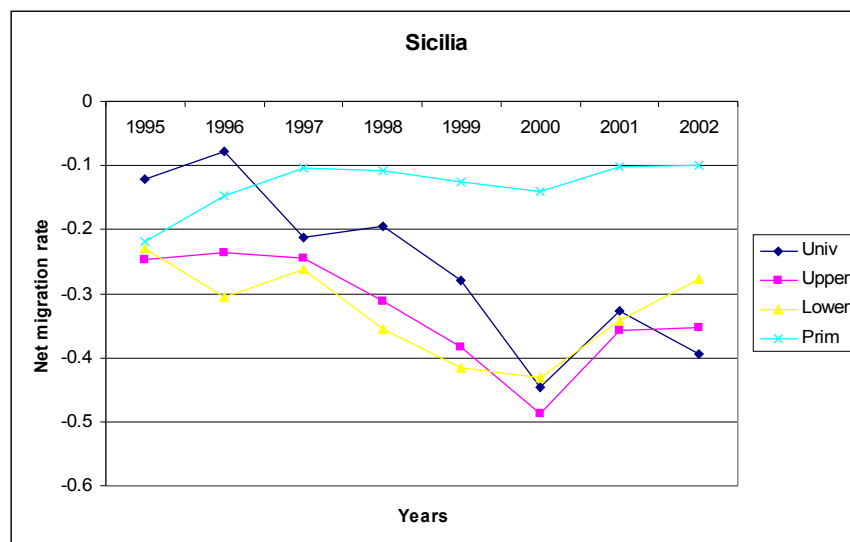
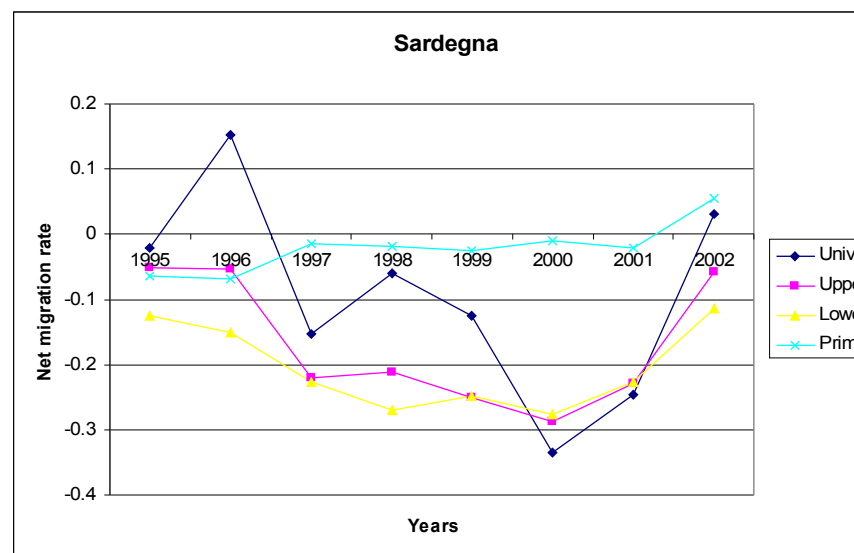
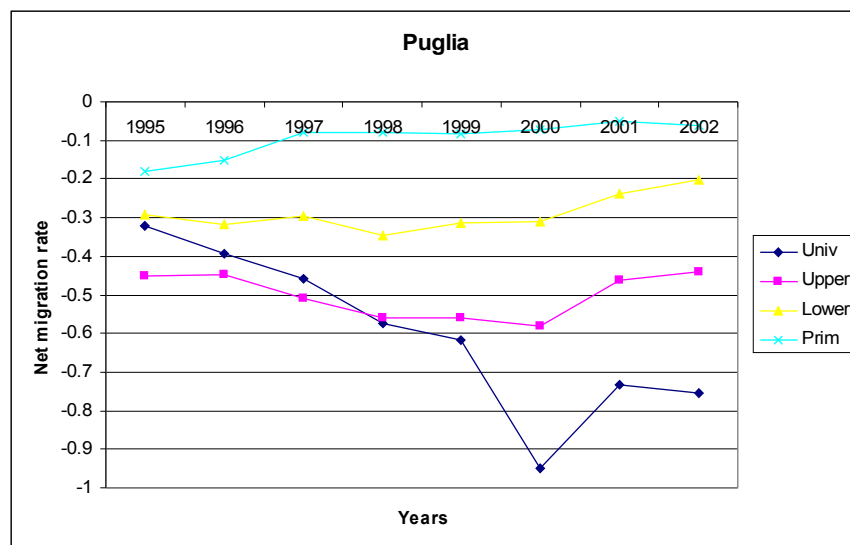
Sample period 1995-2002. Total observations: 160. Heteroschedasticity robust *p*-values in brackets.

**Figure 1.** Net (inflows minus outflows) regional migration rates by educational attainment in the Italian regions.

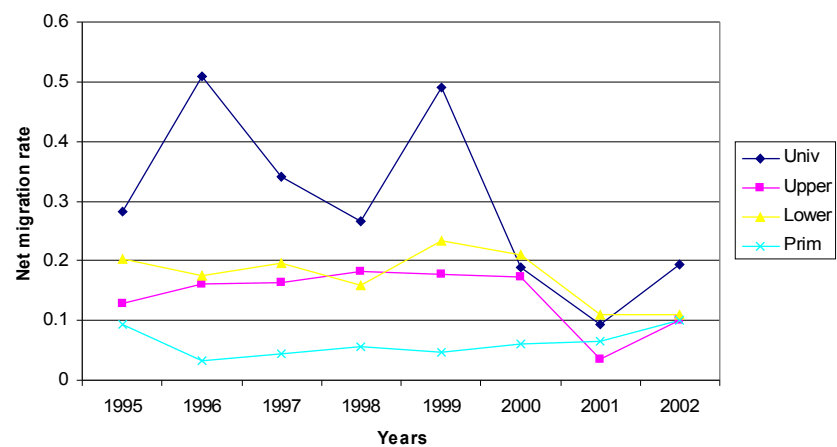




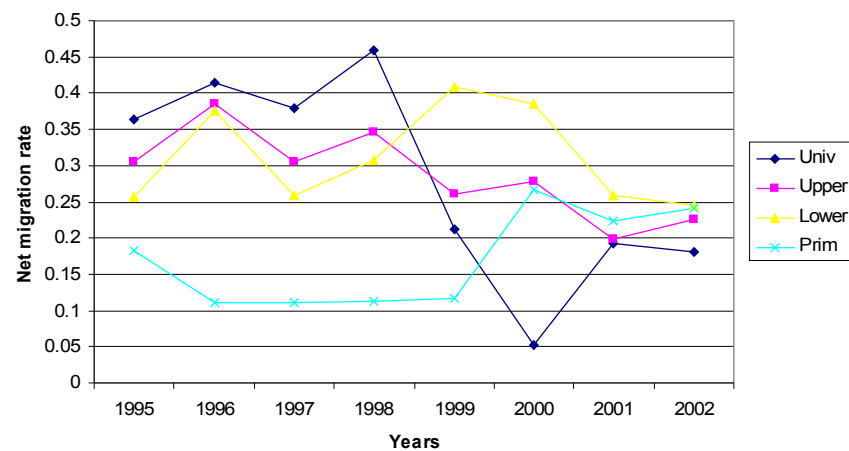




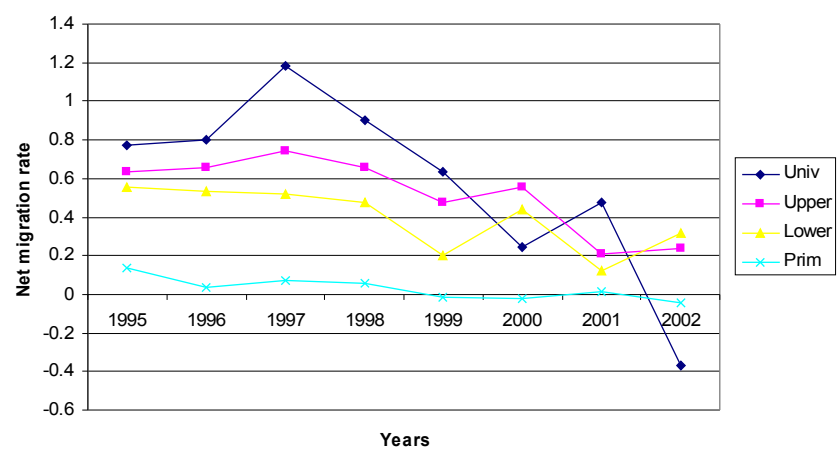
**Trentino Alto-Adige**



**Umbria**



**Valle d'Aosta**



**Veneto**

